SPYRO® SUITE 7

INSTALLATION GUIDE AND RELEASE NOTES

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Revision Notes

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Revision 3	2014, June	Updated for release of version 7.5.1
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Revision 11	2018, June	Updated for release of version 7.7.2
Revision 12	2018, September	Updated for release of version 7.7.3
Revision 13	2019, March	Updated for release of version 7.7.4
Revision 14	2019, September	Updated for release of version 7.7.5

Contents

1 Introduction

This document serves as a guideline for the installation of the SPYRO® Suite 7 simulation software. The SPYRO® Suite 7 software uses the third party software Sentinel License Manager from SafeNet Inc. for the protection and intended use of the licensed software. The Sentinel License Manager is installed as third party software, but included in the installation program of SPYRO® Suite 7.

Furthermore this document provides a summary of new and changed product features and includes notes about features and problems not described in the product documentation.

1.1 Change History

This section highlights important changes in product updates. For a list of corrections to reported problems, please read section 5.

Release 7.7.5

- Corrected adjustments to the coking model (that were implemented with the 7.6.0 release) that could lead to excessive TMT's at EOR
- Improved convergence
- Bug fixes and feature implementations for Integrated SPYRO®

Release 7.7.4

- Improved convergence
- Several improvements for Integrated SPYRO®

Release 7.7.3

- COM Interface fixes for Integrated SPYRO®

Release 7.7.2

- Feature implementations for Integrated SPYRO®

Release 7.7.1

- It is now possible to call multiple cases from the Excel Interface using VBA
- Templates for the Excel Interface have been improved
- Fixed issue where a single unsuccessful call to the license server would cause the SPYRO® interface to hang

Release 7.7.0

- Convection coil fin material can be selected for improved temperature dependent tube fin thermal conductivity calculation.
- VBA macros are now available in the Excel Interface
- Improved cocurrent TLE

Release 7.6.0

- Improved case-wide handling of Units of Measurement.
- Convection coil material can be selected for improved temperature dependent tube metal thermal conductivity calculation.
- Improved convection section flue gas pressure drop calculations.
- Improved convergence in steam system for models that handled streams with very small vapor fraction or very small liquid fraction.
- Adjustment of coke thermal conductivity, coking rate and polymer layer thickness for improved radiant coil metal temperature prediction.
- In the effluent model, a single component flow rate can now be fixed.
- IAPWS-IF97 steam tables are now available in SPYRO® Suite 7.
- Added functionality to model flue gas tunnels in steam reformers.
- The User Manual now features a large section on most results and an improved instruction on how to work with SPYRO® Suite 7.

Release 7.5.3.2

- Improvements in convergency of reformer simulation.

Release 7.5.3.1

- Ambient pressure can now be user defined for case-specific gauge pressure interpretation.
- Improvements in convergency of reformer simulation.
- Nitrogen and/or steam circulation can now be simulated in reformer simulation.
- Several cosmetic improvements and corrections for reformer simulation.
- Hydrogen template now available for key reformer results extraction.

- Several corrections for CDM.

Release 7.5.3.0

- Added the first version of reformer simulation functionality.

Release 7.5.2

- Fixed broken functionality to propagate the coke layer as initial condition for a new case.

Release 7.5.1

- Added option to adjust layout for single row convection bank.

Release 7.5.0

- Added revised ESCOA relations for convection section.
- Improved finning and layout configuration capabilities of the convection banks.
- Straightforward property table generation method.
- The hot start data is included in the SPYRO® case file.
- Support for 64-bit operating systems.
- Update of the firebox model.
- Facelift for the simulation monitor.
- Solved several other bugs, see section 5 for more information.

Release 7.3.6

- Minor update

Release 7.3.5

- Update of the convection section shock duty and tubesheet temperature calculation.
- Update of the simple reactor.
- Solved several other bugs, see section 5 for more information.

Release 7.3.4

- Updated KS7 module.
- Added tuning parameter for FIREBOX efficiency.

- Solved several other bugs, see section 5 for more information.

Release 7.3.1 & 7.3.2

- Access violation observed of SPYRO® Suite 7 with PDT's has been resolved.

Release 7.3.0

- Added Simple reactor model
- Equipped the splitter with component splitting functionality
- Reduced the memory consumption significantly
- Updated the user manual
- The context help "F1" repaired, PDF is used instead of CHM
- Updated the predefined template functionality (PDT)
- Updated the security of the program
- Installer has been updated
- Resolved several bugs in SPYRO® Suite 7 and the EXCEL interface

Release 7.2

- Improved the model that predicts the maximum tube skin temperatures
- Added functionality to read/write coke profiles for the radiant coil and TLE
- Added the kinetic model in the convection banks (default off)
- Added possibility to specify the property system in the venturi model
- Add cold wall clearance to convection bank data
- Improved convergence of cases with a cold start
- Added several units of measurement
- Added interface possibilities in the SPYRO® Suite 7 file with the Excel Add-in
- SPYRO® Suite 7 core updated to version 7.2
- Corrections to reported problems

1.2 Product Contents

The SPYRO® Suite 7 installer includes the following components:

- SPYRO® Suite 7 software with licensed models and features
- Client furnace configuration
- Sample SPYRO® Suite 7 cases
- SPYRO® Excel interface (Add-on license)
- Command line interface
- Documentation
- Safenet Sentinel RMS License Manager Installer
- Safenet Sentinel RMS License Manager Tools

1.3 System Requirements

1.3.1 System Requirements SPYRO® Suite 7 program

SPYRO® Suite 7 can be installed on Microsoft Windows 32 and 64 bit operating systems. The installation has been successfully tested on several Microsoft Windows platforms, including Windows 7. The operating system should be actively supported by Microsoft as we will support the SPYRO® Suite 7 program also on actively supported operating systems by Microsoft. Therefore we currently advise the Microsoft Windows 7 operating system. Running the SPYRO® Suite 7 program on an operating system of the Microsoft Windows Server series is not expected to be a problem.

We recommend using an Intel type CPU based on the Core family or later, minimally an Intel Core i5 type is required. Applying the SPYRO® Suite 7 program in a distributed computing environment (multiple autonomous computers communicating through a network) is not supported.

Minimally 2 GB of RAM memory is required to simulate SPYRO® Suite 7 with a full furnace simulation. We recommend to install at least 4 GB (Note that more than 3 GB can only be optimally used with a 64-bit CPU and corresponding operating system). For the installation of the 32-bit version of the software at least 500 MB of free space needs to be available on the hard drive. For the installation of the 64-bit version of the software at least 800 MB of free space needs to be available on the hard drive. For additional simulations cases we advise to have at least 500 MB available on the hard drive. Microsoft .Net Framework v4.7.1 and the Microsoft Visual C++ 2017 redistributable libraries are required, the installation of which is provided for by the SPYRO® Suite 7 installer.

1.3.2 System Requirements Excel Interface

The SPYRO® Suite 7 Excel interface is compatible with the following Excel versions:

- Microsoft Excel 2010
- Microsoft Excel 2013
- Microsoft Excel 2016

The Microsoft Excel architecture (32-bit or 64-bit) must match the architecture of the installed SPYRO® Suite 7 and SPYRO® Suite 7 Excel interface. Please note that a separate installer for the SPYRO® Suite 7 Excel interface is provided.

1.3.3 SPYRO® Suite 7 license options

Depending on the license agreement we can provide different license options. By default a network license is provided, that allows unlimited concurrent use or the SPYRO® Suite 7 software within the corporate network. Available license options are:

- Network license
- Network license with a limited set of client computers
- Standalone license

The network license can optionally allow grace usage. This allows the user to use the SPYRO® Suite 7 software when not connected to the corporate network for a short period (maximally three days). The standalone license does not require the installation of the Sentinel License Manager.

1.3.4 System Requirements Sentinel RMS License Manager

The Sentinel RMS License Manager will be installed when a SPYRO® Suite 7 network license is provided. The Sentinel RMS License Manager will be communicating with via the SPYRO® Suite 7 program through the local (corporate) computer network. For the installation of a network license a computer needs to be selected that is stable and permanently available to the local corporate network. It can be any type of computer; however laptops or notebooks are not recommended. The running network protocol can be either TCP/IP or IPX/SPX. Installations using the TCP/IP protocol have been successfully implemented, Pyrotec has no experience with the IPX/SPX protocol. The SPYRO® Suite 7 program uses a so called broadcast method to detect the license server, therefore the license server and the computer where SPYRO® Suite 7 is installed should share the same local network. There are no specific requirement for the Sentinel License Manager regarding processor and memory. Suitable operating systems are:

- 32-bit version of Windows 7, Server 2008
- 64-bit version of Windows 7, Server 2008, Server 2008 R2, Server 2012 R2

1.4 Documentation

Product documentation can be found in the Documentation folder as shown under 2.6.

1.5 Technical Support

For information concerning Technical Support, Maintenance Services and other support information, please visit: `http://www.spyrosuite.com` or send an email to our support team: SPYRO@Technip.com

2 Installation

2.1 Pre-Installation Notes

For the installation you need to be logged in as Administrator on the computer.

The SPYRO® Suite 7 setup program offers three main components for installation

1. SPYRO® Suite 7 program
2. Sentinel RMS License Manager
3. Sentinel RMS License Manager Tools

The SPYRO® Suite 7 program should be installed at every designated computer in the network. The Sentinel RMS License Manager should only be installed on the computer that has been assigned to serve as the license server. For this assigned computer PYROTEC has or will request a fingerprint to ensure the identification of the computer by the Sentinel License Manager.

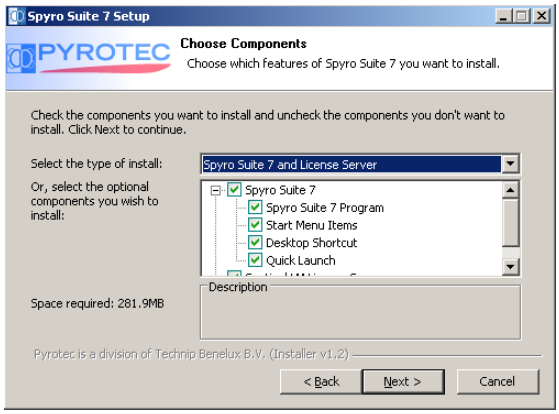
If Sentinel RMS License Manager newer version 8.5.3 or higher is already running on the system, it is not necessary to re-install it. Please refer to the Sentinel RMS License Manager Tools section to see how the SPYRO® Suite 7 license file can be added to the existing Sentinel RMS License Manager. These tools are included to locate and maintain the licenses available on the license server.

2.2 Performing the installation

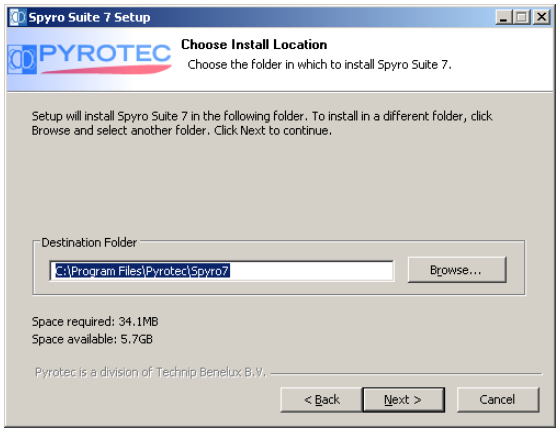
To begin installation, insert the product CD in your computer's CD drive, open the Pyrotec folder of the CD in the CD drive in Windows Explorer and double-click on setup.exe.

2.2.1 SPYRO® Suite 7

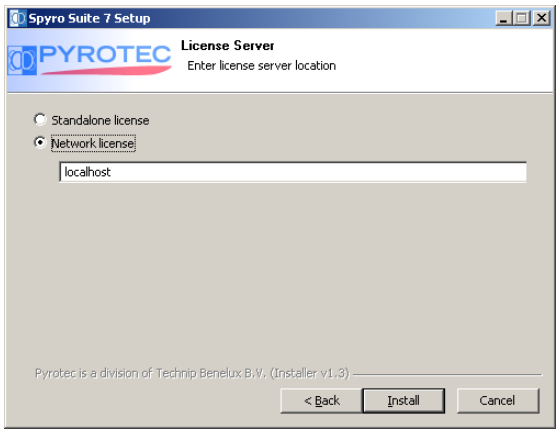
In the first screen you can specify the components to be installed. Click **Next** to continue.



In the following screen you can specify the installation folder. Click **Next** to continue.

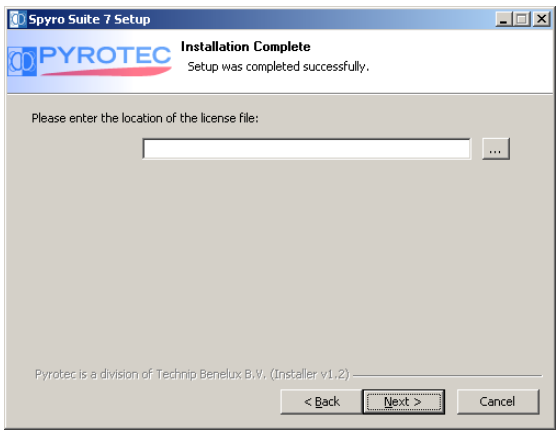


Subsequently select if you are using a standalone license or a network license. In case you are using a network license you can specify the hostname of the license server. The hostname of the license server is by default 'localhost', however if the license server is not installed on the local computer you need to specify the right name in this screen. After clicking the **Next** button the components will be installed.

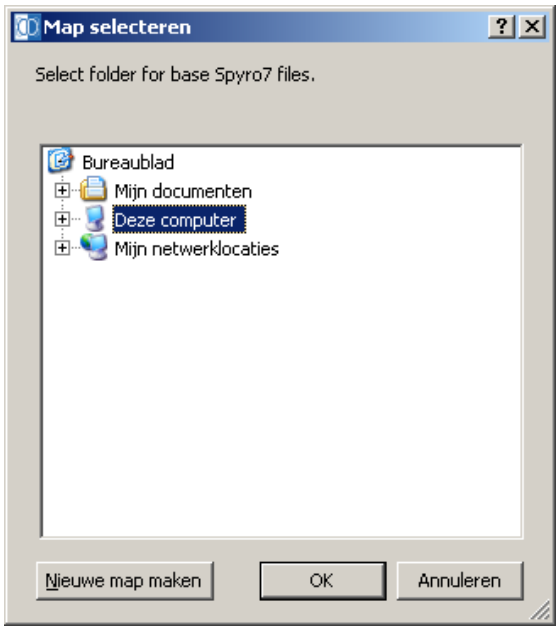


The SPYRO® Suite 7 program requires Microsoft .Net Framework v4.7.1 and the Microsoft Visual C++ 2017 redistributable libraries to run, and the installer will attempt a silent installation of these packages.

If you selected the Sentinel License Manager in the components list, a third party installer will be launched during the installation. Please follow the instructions on the screen. In case you select standalone, then you will be asked to specify the location of the license file. This license file is received directly from Pyrotec or is available on the CD. After successful installation of the Sentinel License Manager you will be asked to specify the location of the license file. You should have received a license file from PYROTEC. If you did not yet receive a license file please contact PYROTEC.



After the installation of the components a File Selection dialog box is shown in which you can specify the location of the case files to be copied. If you do not wish to install the case files select **Cancel** to proceed.



The installation of SPYRO® Suite 7 is completed. Click **Finish** to close the installer.

2.2.2 Sentinel RMS License Manager

By default SPYRO® Suite 7 is licensed by a network license type. Only when instructed otherwise by PYROTEC, the standalone license type should be selected. Note that when using a standalone license, remote desktop sessions for using SPYRO® Suite 7 are not allowed.

The network license will be managed by a license manager on the designated license server, for which a third party software program from Safenet is used: the Sentinel RMS License Manager. The Sentinel RMS License Manager needs to be installed on the designated license server. The Sentinel installation will install a license hosting service in the assigned directory. After successful installation of the Sentinel RMS License Manager you will be asked to specify the location of the license file. This license file must be provided by PYROTEC. If you did not yet receive a license file, please contact PYROTEC. Subsequently, the license will be added to the installed license server, together with a set of license manager tools.

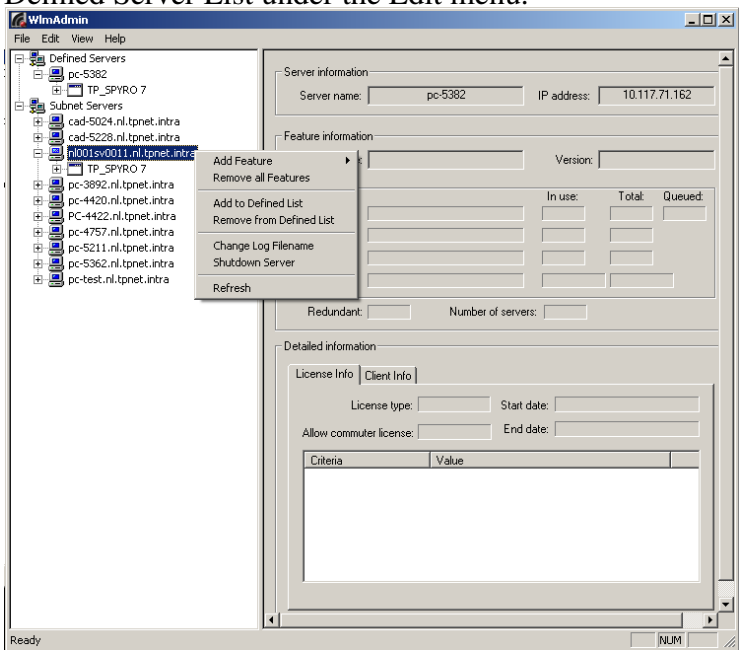
2.2.3 Sentinel RMS License Manager Update

It is possible to upgrade to Sentinel RMS License Manager 8.3.0 and above without uninstalling Sentinel License Manager 7.3.0.9 and lower versions. The Sentinel License Manager 7.3.0.9 will not be active anymore, but it is not uninstalled automatically. The Sentinel License Manager 7.3.0.9 and lower versions can be uninstalled manually. It is at all times necessary to add the licenses to the new Sentinel RMS License Manager. This means that upgrading from Sentinel License Manager 7.3.0.9 to Sentinel License Manager 8.3.0, the license has to be installed manually. Upgrading from Sentinel RMS License Manager 8.3.0 to a higher version is automated, with licenses automatically maintained.

2.2.4 Sentinel RMS License Manager Tools

The License Manager Tools are used to view and manage the licenses.

WLMADMIN This windows based tool can be used to manage the Sentinel RMS License Manager license servers that are available local and on the network. It will automatically search (broadcast) for detectable license servers in the Subnet Servers. For each computer found where a Sentinel RMS License Manager is running you can examine the managed licenses. By right clicking on a detected server you can manage the server and add/remove licensed features. It might happen that the computer you are looking for is not present in this list. To force Wlmadmin to examine this computer you can add the computer hostname to the Defined Server List under the Edit menu.



WECHOID This windows based tool will determine the fingerprint of the examined computer. A fingerprint is used by the Sentinel RMS License Manager to lock the PYROTEC license to a specific computer. The default locking criteria that PYROTEC uses to obtain a fingerprint are a combination of the Disk ID, the hostname and the Ethernet address.

LSMON This command line utility is used to examine a license at a specific computer. It will give similar results as found with the windows based tool WlmAdmin. By default the local computer is searched.

```
Usage: lsmon <hostname>
```

LSWHERE This command line utility will give a list of the detectable license servers that are active on the network. It might happen that a computer you are looking for is not listed. It is still possible to examine the managed licenses on that computer with the lsmon tool.

```
Usage: lswhere <-d> <-r>
        -d: Display Server Details.
        -r: Display IP/IPX address only
```

SLMDEMO This windows based utility can be used to evaluate to get a license from the license server. Specify the hostname of the license server as the server to connect to. Then specify the Feature and Version. The default Feature and Version are ”TP_SPYRO” and ”7”, your Feature and Version can be found in the Pyrotec.ini. Now the license can be obtained by clicking ’Get License’. If successfull the available license count will increment to 1, else the text box will indicate an error message. Afterwards it should be released again.

It is also possible to test a standalone license. In that case the license file ’lservrc’ that resides in the SPYRO® Suite 7 installation folder has to be copied to the same folder as where the program ’slmdemo.exe’ is resides. Specify ”no-net” as the server and get the license. The available count will show 1 if successfull.

LSLIC This command line utility must be used with precaution. This command line utility can add and delete active licenses from the Sentinel RMS License Manager, both from the local license server or one present in the network. To add or delete a license it is not necessary to stop the Sentinel RMS License Manager, the command is successfully executed while the license server is running. This utility is specifically used to install a prolongation license for SPYRO® Suite 7 with the -F [filename] option.

Before using this utility it is advised to check and necessarily set the LSFORCEHOST environment variable. This environment variable forces the lslic utility to change the license at the specified host. The value of this environment variable should equal the license server host. Do not use the environment variable LSHOST as indicated by the help text of this utility. It is known that the this utility will still apply a broadcast method and can detect any arbitrary server. The LSFORCEHOST environment variable ensures that only the specified host is queried.

```
Usage: lslic
Add to license server only
 -a  [licenseString to add ]
 -f  [filename]
 -ad [license code with its Distribution Criteria]
 -fd [filename (containing license codes with Distribution Criteria)]

Add to license server and normal/redundant license file
 -A  [license code to add]
 -F  [filename]
 -Ad [license code with its Distribution Criteria]
 -Fd [filename (containing license codes with Distribution Criteria)

Remove from license server only
 -d  [feature version [capacity | NOLIMIT]]
 -removeall
 -removeallcap [feature version]
```

Use LSFORCEHOST environment variable to specify the contact server.

TESTLICENSE This tool checks the hosted license as used by the SPYRO® Suite 7 program. The tool should therefore be located in the same directory as SPYRO7.exe and the Pyrotec.ini files. Running this tool will show typical results of the PYROTEC license, like the licensee and license number.

```
Inspecting        : 'C:\Program Files\Pyrotec\SPYRO\pyrotec.ini'
License name      : 'TP_SPYRO 7'
Program is Licensed to : 'Technip Benelux B.V.'
Licensed number   : '57000'
License will expire in : '266' days
The checksum is   : 'abcdefghijklmnopqrstuvwxyzab'
PROGRAM TERMINATED NORMALLY
Fortran Pause - Enter command <CR> or <CR> to continue.
```

2.2.5 PYROTEC.INI

In the same folder as where SPYRO® Suite 7 is installed you will also find a file called 'pyrotec.ini'. This file defines at which server the Sentinel RMS License Manager is running and which license should be queried. For a network license the host name of the license server should specified for the HOST property. For a standalone license the HOST property should be equal to 'no-net'. If the license server is moved, you can update this property. Do not change the LICNAME property this will cause SPYRO® Suite 7 to stop functioning properly.

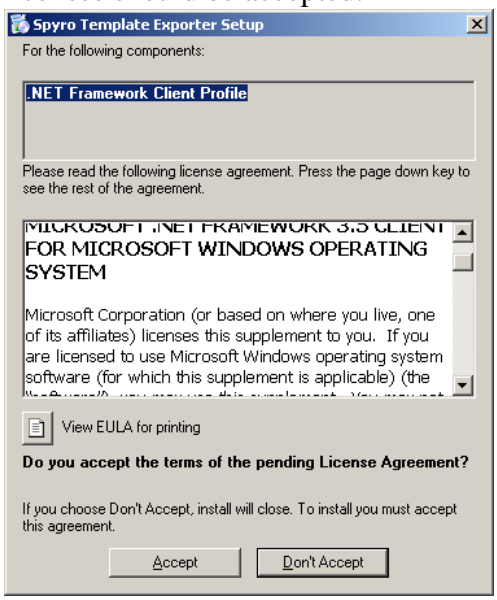
The contents of the file will look like:

```
HOST=<host name License Server>
LICNAME=<TP_SPYRO 7>
```

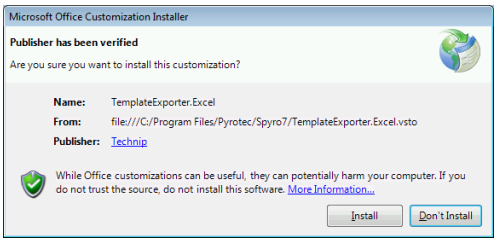
2.2.6 SPYRO® Excel interface Add-on

The installer for the SPYRO® Excel Interface for Excel 2010 is not included in the installer. This installer should be started manually from the product CD and can be used for Excel 2010 and Excel 2013

To ensure that the SPYRO® Suite 7 Excel Add-in functions correctly, the Microsoft .NET Framework 4.7.1 needs to be installed on your system. If the .NET Framework is absent, it will be installed automatically. This installation is originally a Microsoft installation, so the Microsoft licenses should be accepted.



After the setup, the SPYRO® Suite 7 Add-in should be accepted in Excel. This will be asked when running Excel for the first time after the installation of the Add-in.



2.3 Grace license

The grace license option is an optional part of a network license and allows the user to run the SPYRO® Suite 7 program when not connected to the corporate network. During the unavailability of the network a grace license is used that is automatically stored on the local computer. The grace license is valid for a period of three days. This period is re-initiated when a valid license is obtained from the license server. To successfully use the grace license option the next prerequisites have to be met.

- A license that allows the grace license option. This can be verified with the WlmAdmin License Manager tool.
- SPYRO® Suite 7 v7.5.0 or higher
- Sentinel RMS License Manager version 8.5.3.35 of higher at the license server
- At the local computer the Sentinel RMS License Manager should not be installed or deactivated.
- The local computer should not be connected to the corporate network. Preferred is even to disconnect all network connections.

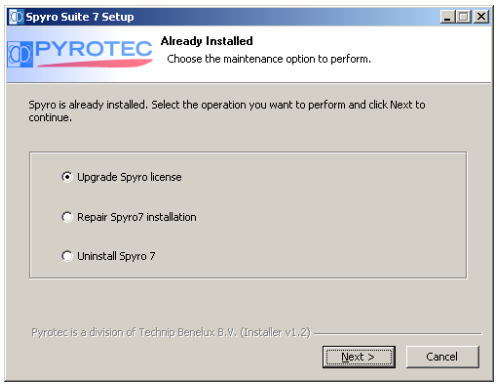
2.4 License Update

PYROTEC issues licenses that have a maximum validity of one year. This system is to ensure that the client specific information embedded in SPYRO®software is under full protection. Shortly before the active license expires a new license will be sent. In the underneath part instructions are given to successfully replace the active license with the current license.

In case you have other non PYROTEC licenses present on the Sentinel RMS License Manager please follow these instructions also to update the other licenses. A frequent error that we have found in our colleagues manuals is to shut down the Sentinel RMS License Manager service, replace the license configuration file and start up the Sentinel RMS License Manager service again. If the license file is updated like described above the other managed licenses will be lost.

2.4.1 Network license update

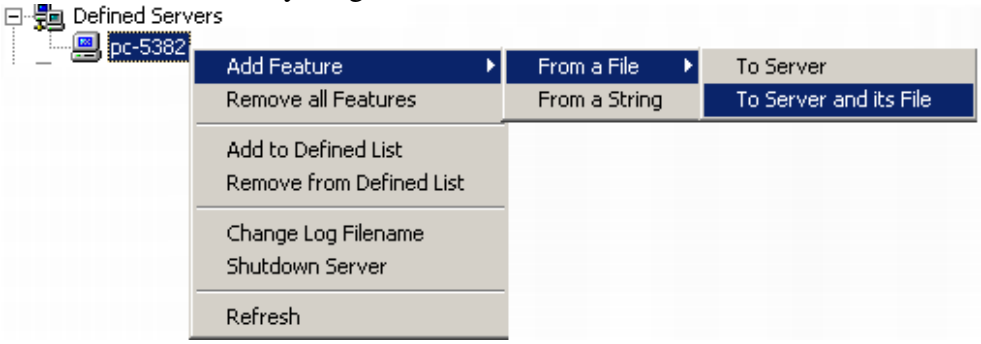
To add or replace the new license received from Pyrotec run the SPYRO® Suite 7 installer on a computer with the latest SPYRO® Suite 7 version installed, and choose the 'Upgrade SPYRO® license' option. After clicking on the Next button an external program will be launched that will take care of installation of the license.



Alternatively the command line utility lslic or the windows based WLMADMIN can be used, without the need to run the SPYRO® Suite 7 installer.

Windows based update Follow the next instructions to successfully install the new license using the windows based utility. The WLMADMIN tool addresses the Pyrotec license as a feature.

1. Start the WLMADMIN program
2. Locate the right server in the Subnet Servers or via the Defined Servers
3. Unfold the features managed on this license server and select the TP_SPYRO 7 license
4. Remove this feature via the menu accessed via a right mouse click.
5. Add the new feature by a right mouse click on the server name to *the server and its file*.



6. Select the recently received license file from Pyrotec (lservrc.xxx)

7. The utility will issue a window showing the feature that will be added.

Please note that the text in above picture has been blurred intentionally.

8. Upon successful installation the licensed feature will be listed under the license server again.

Command line update Follow the next instructions to successfully install the new license using the command-line utility.

1. Copy the new SPYRO® Suite 7 license file to the location where the lslic tool is found. This will probably be “c:\Program Files\Common Files\SafeNet Sentinel\Sentinel RMS Development Kit\8.5\English\Tools”.

2. Open a command prompt.

3. Go to the directory where the Sentinel RMS License Manager tools are located.

```
> cd "c:\Program Files\Common Files\SafeNet Sentinel\
    Sentinel RMS Development Kit\8.5\English\Tools"
```

4. Check if the LSFORCEHOST environment variable is set to the right hostname where the license server is running. If necessary set the right hostname.

```
> SET LSFORCEHOST=<hostname>
```

5. Check the current license with the lsmon tool. Note the feature name and version.

```
> lsmon <hostname>
```

6. Add the new SPYRO® Suite 7 license to the license server

```
> lslic -F <license file>
```

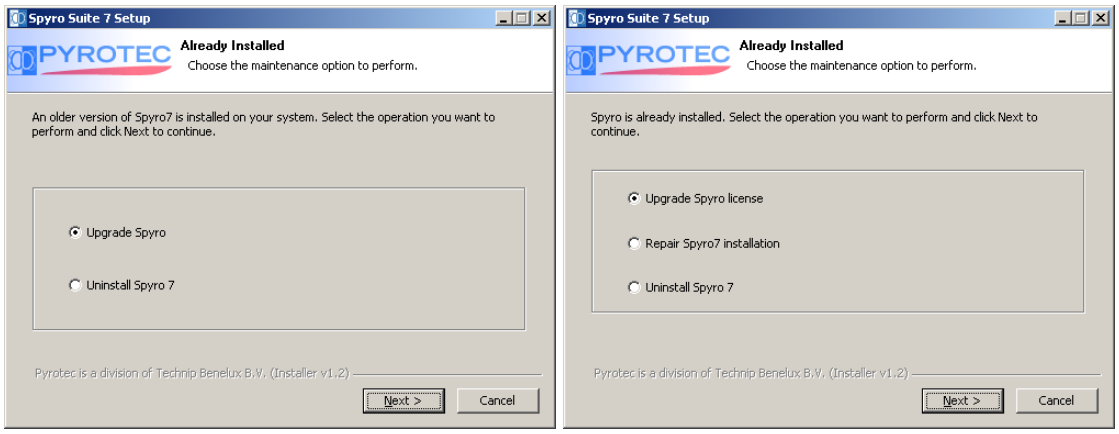
2.4.2 Standalone license update

A standalone license can only be successfully updated when a standalone license has been used on the computer/laptop before and the new license file is also valid for this computer/laptop.

- Copy the new license file (lservrc-YYY.XXX) to the SPYRO® Suite 7 installation folder (eg c:\Program Files\Pyrotec\SPYRO)
- Delete the current license file 'lservrc' or rename it to preserve it
- Rename the new license file to 'lservrc'
- Verify the license in the message window of SPYRO® Suite 7

2.5 Changing, Updating and Removing the Product

You can repair, update, or uninstall an existing installation of SPYRO® Suite 7 by running the SPYRO® Suite 7 installer and selecting the *Repair SPYRO7 installation* or *Upgrade SPYRO* option in the Maintenance screen. Repair or upgrade will uninstall the currently installed SPYRO® Suite 7 version and reinstall the new version using the newly given settings.



You can also remove the current installation by using the uninstall.exe in the installation folder or the Start Menu, or through the Windows Control Panel "Add or Remove Programs".

2.6 Installation Folders

The installation folder arrangement is shown in the diagram below. Not all folders will be present in a given installation. Additional client specific folders can be present as well.

C:\Program Files\Pyrotec

- License Tools

- SPYRO
  - Documentation
  - Templates

The folders are used as follows:

License Tools Tools for adding / removing / maintenance of the license manager

SPYRO7 Main source of the program

Documentation User documentation

Templates Sample templates for output post-processing

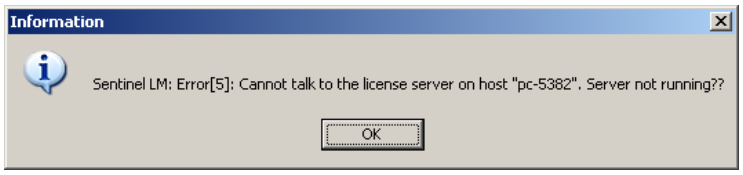
If you are installing on a system with a non-English language version of Windows, the name of the Program Files folder may be different. On 64 bit architecture systems, the folder name is Program Files (x86), or the equivalent for non-English language versions of Windows.

2.7 Troubleshooting Installation Issues

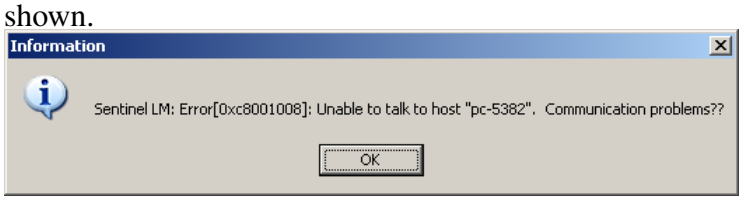
License was not successfully installed
During the installation process you will be asked to specify the location of the license file as received from PYROTEC. This file is called lservrc.xxx, the triple x indicates a number. If the license addition/deletion utility returns an error 19 (failed to add license code), then the obtained fingerprint as encrypted in the license does not match with the fingerprint of the computer that was sent to PYROTEC. Check if this is the right computer, otherwise please contact PYROTEC.

The Sentinel RMS License Manager cannot be detected from the network
Check if the process 'lservnt.exe' is running on the license server. You can use the Windows Task Manager to check this. If the server is running check if you can contact the host where the license server is running from the client computer where SPYRO® Suite 7 is installed. Typically you would use the ping command in a command shell. If the host can be contacted check if the license server can be contacted the License Manager Tools lsmon, lswhere and Wlmadmin can be used for this check.
If any of these tests fail you need to contact your IT System Administration to set the right access for the network connectivity. Typically the Sentinel Licence Manager communicates over the private network via the UDP/IP protocol and requires access to port 5093. The firewall rules need to be set correctly to allow network communication for the lservnt.exe program

The Sentinel RMS License Manager cannot be reached
Communication from the client computer to the specified license server is not possible or the Sentinel RMS License Manager on the specified server is not running.
When querying the license server with the WlmAdmin tool and communication with the server is not possible, then the next message will be shown.



Communication with the license server via the corporate network needs to be restored. There are likely network errors or firewalls active. Verify the Pyrotec.ini file: one of the lines should specify the license server name, is this specification correct. HOST=<license server name>
The specified host should be available within the corporate network, please verify if the server is running and can be pinged. If any of these tests fail you need to contact your IT System Administration to set the correct access for the network connectivity. Typically the Sentinel RMS License Manager communicates over the private network via the UDP/IP protocol and requires access to port 5093. The firewall rules need to be set correctly to allow network communication for the lservnt.exe program
When querying the license server with the WlmAdmin tool while the Sentinel RMS License Manager is not running on the host but communication is possible, then the next message will be shown.



The Sentinel RMS License Manager on the server should be started again. Either reboot the server or start the License Manager service via the Microsoft Management Console.
If any of these tests fail you need to contact your IT System Administration to set the correct access for the network connectivity. Typically the Sentinel RMS License Manager communicates over the private network via the UDP/IP protocol and requires access to port 5093. The firewall rules need to be set correctly to allow network communication for the lservnt.exe program

Another version of the Sentinel RMS License Manager is active
The Sentinel RMS License Manager can manage multiple licenses of multiple vendors. You should be able to add the license for SPYRO® Suite 7 to the existing Sentinel RMS License Manager. Do check the current version of the Sentinel RMS License Manager. PYROTEC uses version 8.5.3 or higher. If an older version is installed please upgrade to the latest version as distributed by the SPYRO® Suite 7 installation. If a newer version is installed you can use this version.

3 SPYRO® Suite 7

This section summarizes changes, new features and late-breaking news about the SPYRO® Suite 7 program.

3.1 Compatibility

In general, cases simulated with earlier versions of the SPYRO® Suite 7 program (Build 34 and later) may be used in a simulation with SPYRO® Suite 7 (version 7.7.5). Exceptions include:

1. Simulations that include a steam dilution ratio or a steam flow rate, defined in the feed.
2. Unit of measure of the flowrate incompatibility.

3.1.1 Steam dilution ratio

Earlier versions of SPYRO® Suite 7 contained the possibility to define the dilution steam ration in a feed, outside of the detailed component list. This was defined as the steam flow rate or the steam flow ratio. This feature is obsolete and can be replaced by adding a separate (steam) feed and a mixer model to mix the new stream with the original feed. The mixer options can be used to specify the flow ratio or the flow rate can be fixed in the added steam feed.

3.1.2 Unit of measure of the flowrate incompatibility

If opening a file with 7.1.3 or earlier, values with the following units: ton/h, kton/h, lb/s and lb/h are changed into an incorrect value. Users should check and correct these values manually.

3.2 New and Changed Features

- Enabled usage of VBA macros in ExcelInterface *(as of 7.7.0)*
- Convection coil and coil fin material can be selected for improved temperature dependent tube metal thermal conductivity calculation *(as of 7.7.0)*
- Adjustment of coke thermal conductivity, coking rate and polymer layer thickness for improved radiant coil metal temperature prediction *(as of 7.7.0)* - and corrections to this adjustment *(as of 7.7.5)*
- The hot start data is included in the SPYRO® case file *(as of 7.5.0)*
- Support for 64-bit operating systems *(as of 7.5.0)*
- Update of the physical model of the convection banks *(as of 7.5.0)*
- Update of the firebox model *(as of 7.5.0)*
- Solved several other bugs, see section 5 for more information

3.2.1 Effects of new and changed features

Hot start data Due to the inclusion of the hot start data, the .HSF file is not used anymore. The first time a new simulation is run, the current .HSF file will be read. After a simulation with the option to write hot start data, this file is not needed and will not be used anymore.

64-bit operating systems Next to the default 32-bit version a full 64-bit version is present for the graphical user interface and the command line version. If memory problems occur, using the 64-bit version might be the solution.

Physical model of the convection banks With the update of the physical model for the convection banks, an improved heat flux model at the highest and lowest temperature is implemented, using local properties. This might impact the maximum tube metal temperature, maximum fin tip temperature and all derived variables.

Kinetic model in the convection banks The cracking in the convection bank has been improved. If cracking occurs it was under-predicted in the previous version of SPYRO® Suite 7.

Liquid property generation The method from the old CONVEC program has been implemented, to fill a gap when no other liquid properties are available. Note that the accuracy of these properties has not changed since EFPS 6.

Firebox model The firebox efficiency is now calculated according to the API-560, including sensible heat. This will be most noticeable if the fuel or air is preheated. The model for the placements of the tubes within the firebox has also been updated. In specific cases it was possible that parts of the tube where placed in a part where erroneously no heat was transferred to the tube. This has been resolved.

3.3 Known Issues

3.3.1 Results on Flowsheet

When upgrading from 7.2.0 or earlier:
When showing the results on the flowsheet, these can be incorrect or missing, especially in the convection section.

3.3.2 Boiler feed water quench

When upgrading from 7.3.6 or earlier:
Due to the improved convection section model, it can occur that the duty to the steam system changes so much that the fixed high pressure steam product temperature cannot be reached. The boiler feed water injection will drop to zero, causing non-convergence of the case. To resolve this issue, please check the temperature and the boiler feed water flow rate.

4 SPYRO® Excel Interface

This section summarizes changes, new features and late-breaking news about the interface of SPYRO® Suite 7 in Excel.

4.1 Compatibility

The interface in Excel is only compatible with `.spy7` files that are simulated with the latest version of SPYRO® Suite 7 (version 7.7.5). Multiple case files can be loaded and evaluated in the Excel Interface using VBA macros.

4.2 Known Issues

4.2.1 Abort button

If the simulation is aborted in another way than from Excel itself, the button stays on top. Excel will need to be restarted in order to start a new simulation.

4.2.2 Excel 32-bit RAM limit

The 32-bit version of Microsoft Office Excel has a limitation on the amount of RAM memory to be used of approximately 2 GB. It is not recommended to re-run simulations with multiple input locations more than once on the same Excel file without saving and closing Excel in between in order to clean the memory.

4.3 Unsupported simulations

Simulations that contain a recycle or multiple furnaces on the flowsheet are not supported.

4.4 Using VBA

As of version 7.7.0, it is possible to call specific functionality of the SPYRO® Excel Interface through VBA. Please consult the dedicated chapter and appendix in the User Manual.

4.5 Available templates

The SPYRO® Excel Template defines the data that is transferred between SPYRO® and Excel. It defines both how and which data is transferred. The currently available templates are:

- *YieldPerformance*: a dedicated template for yield and radiant coil analysis. This template allows running multiple variations of a SPYRO® case from Excel
- *FurnacePerformanceOverview*: a dedicated template for the performance of the convection section and radiant coil, only collecting data from SPYRO® file

- *GeneralFurnaceOverview*: a template containing the information from YieldPerformance and FurnacePerformanceOverview
- *DTM*: dedicated radiant coil data matrix, only collecting data from SPYRO® file
- *EDM*: dedicated extra data matrix, only collecting data from SPYRO® file
- *TDM*: dedicated TLE data matrix, only collecting data from SPYRO® file
- *FDM*: dedicated FIREBOX® data matrix, only collecting data from SPYRO® file
- *CDM*: dedicated convection section data matrix, only collecting data from SPYRO® file
- *H2*: dedicated reformer furnace data matrix, only collecting data from SPYRO® file

5 Fixes list

Solution to reported items.

5.1 Version 7.7.5

- New features

  2419 [SAPC7/SRTO7/SPSL7] Implement check to verify whether SPYIN variables are fixed in the case file

  2523 [SRTO7/SAPC7] Reporting of call number in log required

  2524 [SRTO7/SAPC7] Improve naming of logs

  2525 [SRTO7/SAPC7] Implement method for automatic determination of SPYROLink models

- Resolved bugs

  2392 Convergence problem

  2410 Literature references in Integrated SPYRO manuals not compiled properly with pdflatex

  2518 Cold start case with Crossover volume skips all presolve steps (except FBX) after first Crossover presolve step

  2519 [SAPC7] Obsolete information on convergence tolerance not being used when converging on radiant wall temperature and CIP

  2520 Excessive TMT's at EOR

  2521 [SAPC7] Coking rates not reported even though license for coking rates present

  2522 [SRTO7/SAPC7] Frequent warnings about too low coil outlet velocity

  2527 [SRTO7/SAPC7] Several input variable descriptions are invalid as they refer to obsolete Online 6 practices

  2530 [SRTO7/SAPC7] Reported coil pressure drop includes pressure drop across the Venturi

  2535 [SRTO7/SAPC7] Wrong CONOP value reported in error message

  2537 [SRTO7] CONOP2 and SPYOUT description missing from section on SPYROSuite 7 variable counterparts in SRTO7 manual

  2542 Failure to add license to license manager is reported as 'error occurred during the installation of the license manager'

- Known issues

  Please see 'Known issues' part in section 'Version 7.7.1'

5.2 Version 7.7.4

- New features

  2440 Provide method to infer number of successful calls before error since initialization from SLNK log

  2447 [SAPC7] Allow buffering of calls

- Resolved bugs

  1939 Incorrect warning message when pipe length is shorter than duct length in convec bank

  2423 Remove annoying 'beep on license error'

  2430 TestIntegrated not working in 64bit version

  2432 Explanation on error -4012 in manuals should include most obvious troubleshooting instruction

  2437 SAPC7 manual not mentioning relevant differences between Integrated SPYRO Basic and Performance Edition

  2438 Value of NUMBEROFLASTSOLUTIONS set in configuration file not used in SRTO_KS7

  2445 [SAPC7/SRTO7] Unfixed pressure drop in adiabatic volume reported as error, while friction calculations active

- Known issues

  Please see 'Known issues' part in section 'Version 7.7.1'

5.3 Version 7.7.3

- Resolved bugs

  2383 [SRTO7] SRTO returns -20 when called from Aspen Plus

- Known issues

  Please see 'Known issues' part in section 'Version 7.7.1'

5.4 Version 7.7.2

- New features

  2380 [SRTO7] Add option to define the maximum number of Broyden steps in the last Newton step before writing DSPYOUT

  2381 [SRTO7] Add option to trigger re-initialization of FGEOM through SPYIN

2382 [SRTO7] Add option to trigger saving the spy7 file after convergence

2384 [Excel Interface] Implement method to extract labels for Convection Section results

- Resolved bugs

2136 Selection of Fuel Oil Characterization yields ”GOCHAR module is not available”

2196 Excel Interface Installer fails to install certain required components

2200 User Interface will not prohibit connecting two coil sections

2224 Unable to activate the VSTO add-in

2325 When modifying a UOM definition in an existing UOM system, inputs can undergo undesired and unexpected numerical changes

2358 Manual: Sections on 'new features' and 'known issues' not indicating in which versions these features and issues were introduced

2369 [SRTO7] SRTO_SERVER.exe hangs and is not terminated by Scheduler

2373 [SRTO7] SRTO7 log contains message ”SLNKSLNKInitSchedulerMessage”

2383 [SRTO7] Testing SRTO always yields -604: Internal Scheduler Error

- Known issues

Please see 'Known issues' part in section 'Version 7.7.1'

5.5 Version 7.7.1

- Features / Enhancements

2323 Functionality required to load more than one case/template using the template exporter VBA functions

- Bugs / Errors

1556 License failure of SPYRO7CMD while license is valid

2108 Several modifications required on FurnacePerformanceOverview.xdmt

2165 Default value for the Venturi split factor is 0, while the minimum value is 1

2313 Installer: correct VC++ redistributables not included

2318 KTIFileGenerator not created for v7.7.0

2328 Wrong version number in user manual

2345 SAPC7 manual explains yields are available, without mentioning limiting conditions

- Known issues

2008 Effluent results in fractions instead of wt% , unit not changeable

2027 No boundary checking for gasoil characterization boiling curve

2068 Calculated specific gravity 0.0 for a gasoil characterization

2092 Excel Interface: Apply to current sheet after running simulation will return last simulation values

2133 Unable to reset or delete non-mandatory PINA data

2137 Suspicious values generated physical properties for HGO feed

2139 Suspicious values steam properties in PhysProp298K

Although the convergence behavior of Simple Reactors has vastly improved, it is still advised - when building a case from scratch - to keep all conversions in Simple Reactors at 0.0 (default value) for an initial run, then change all conversions to required values and run again with a hot start.

5.6 Version 7.7.0

- Features / Enhancements

1937 Component flow rate profiles along reformer tube as output

2244 Remove the maximum limit of L/D<60 on the radiant coil return bends, to allow for the easier modeling of S&W coils

2248 Resolving message of SPYRO to unfix 310 variables

2264 Expose Excel Interface to VBA

- Bugs / Errors

1337 Unmentioned Error codes in documentation

2025 H/C Atomic ratio is always reported to be incorrect

2077 Description of CIP in the manual wrong

2159 Two furnace models have the same name when added to the flowsheet

2205 Empty string encountered as description for one of the PreSolve steps

2209 Crash when hitting 'check' after deleting a Reformer Tube Section model from the flowsheet

2210 Pressure drop in adiabatic transfer line volumes unexpectedly low

2213 Spyro 7 file failed to converge with cocurrent specified in double pipe TLE

2214 vapor fraction 1.0 at the shell side of TLE inlet

2216 Results for convection section rows are presented backwards (last row first) for countercurrent banks

2219 H2 template: results for total fuel flow and total air flow incorrect

2220 Error in displaying Coil pipe pass heat transfer output table when scrolling through time points

2225 Material selection for convection coil fin not implemented

2226 TLE Shell flow direction appears not to be a PDT element

2246 SPYRO startup messages on licensed modules and features incomplete

2247 SPYRO startup messages on licensed kinetic schemes messy

2250 Failure to create datamatrix files if no license for SPYRO Excel Interface is present

2252 Messages on caller info unclear

2257 Setting UOM system is not working correctly

2266 Coil pipe pass Heat transfer output table new GUI not matching old GUI

2268 Key component flow rate not properly calculated in the sink model

2269 Unreported error code -9001 encountered for SRTO7

2270 Installation guide: Sentinel RMS License Manager ports reported wrong

2274 SRTO: Temperature in Adiabatic volume not reported

2278 SRTO: FGEOM_DIRNAME in SRTO_Config is set to irrelevant location

2279 SRTO: DSPYOUT always 0

2280 SRTO KS7 Scheduler and Server not registered properly

2281 SPSL KS7 Server and Scheduler not registered properly

2282 SAPC KS7 Server not registered properly

2283 Debug Assertion Failure during SPSL Tester execution.

2285 Incomplete string encountered as description for one of the PreSolve steps

2286 SRTO documentation: Location of MTMT's in SPYOUT unclear

2290 [Installer] Error replacing FGEOM_DIRNAME string in SLNK_Config.ini

- Known issues

2008 Effluent results in fractions instead of wt% , unit not changeable

2027 No boundary checking for gasoil characterization boiling curve

2068 Calculated specific gravity 0.0 for a gasoil characterization

2092 Excel Interface: Apply to current sheet after running simulation will return last simulation values

2133 Unable to reset or delete non-mandatory PINA data

2137 Suspicious values generated physical properties for HGO feed

2139 Suspicious values steam properties in PhysProp298K

2165 Default value for the Venturi split factor is 0, while the minimum value is 1

Although the convergence behavior of Simple Reactors has vastly improved, it is still advised - when building a case from scratch - to keep all conversions in Simple Reactors at 0.0 (default value) for an initial run, then change all conversions to required values and run again with a hot start.

5.7 Version 7.6.0

- Features / Enhancements

0039 Burner data tab required in Firebox model

0117 CONVEC - Tube conduction: material and temperature dependency required

0436 add possibility to fix the flow rate of one component in the effluent

0444 Convec : Add ability to select tube and fin material

0797 Add an option to select the material and use temperature dependent conductivity equations

0924 Feed model - Normlise PINA option

0944 Implement steam tables according IAPWS IF97

1147 Improve logging in the template exporter

1148 Make FPS overview available in Excel Interface

1204 Incorrect UoM assigned to several Flame burner heat release profile parameters

1205 Heat release profile captions should be more descriptive

1234 Convec: Fin temperatures are only shown in the row model output.

1265 TMT Pyrometer reading vs True TMT

1318 Add version number of SPYRO template exporter in help-about menu SPYRO RIBBON in the excel interface

1334 Firebox dimension in calculation (higher odd numbers)

1353 UOM should be saved in the case file

1362 No documentation for Inside HTC calculation method in Convec

1386 Coil inlet Venturi PDT element

1520 Description in manual is missing a section in the EDM

1569 Missing description for ”Data Manager Initialization failed with code -4100”

1575 Document the update of SLM server 7.3 to 8.3

1576 SPYRO Excel Interface Conversion option

1577 SPYRO Excel Interface Effluent yield

1654 Partial steam entering steamdrum

1659 Add option to adjust all units

1679 Description of PPF format missing in User Manual

1712 option to leave out theoretical parts from manual

1713 User manual: description of the results.

1787 The amount of 90 degree bends in the user manual is missing

1811 User Manual: Create (new) tutorial

1812 Cocurrent flow simulation of BFW preheater of last TLE

1814 Licensable feature for Component splitting in documentation

1827 Hide redundant button for optimization

1833 Item on known licensing issues missing from Installation Guide

1840 Corbel size is not a PDT element

1848 Installer Script v1.6: SPYRO-Excel Interface installation path

1855 Export detailed feed specification file with redundant info

1856 A DFS file type description is missing in the User Manual

1865 SPYRO7 User Manual: Decomposition explanation

1879 Monitor graphs for multiple furnace simulation

1892 Too low numerical significance of graphs

1896 Only show parameters tab in firebox for experts.

1907 Tunnel impact implementation in Reformer simulation

1919 Sharper icon for SPYRO Suite

1930 Update inside heat transfer coefficient relations

1940 Effective kinetic factors in Reformer Simulation not reported

1959 Add note for compatibility in the installation manual

1976 Description of Spyro Excel interface missing from User Manual.

1977 Hydrogen excluded in HC ratio calculation

1980 Unclear calculation method pressure drop flue gas CONVEC

1989 Add uninstall information to Add/Remove Programs

1994 Name change for SpyroInterface template

2007 User must be notified of incorrect tube metal temperature when number of streams unequal to number of pipes per row

2010 Increase license strictness policy

2057 Adjustment of coke thermal conductivity, coking rate & polymer layer thickness

2080 Output missing for Template Exporter

2143 Add to output whether an inlet or outlet temperature of a convection bank is stuck on a boundary of a property table

2172 PDT check fails for custom row layout of convection bank

2174 PDT check fails for missing vertical pitch of UFPH bank

2177 PDT elements written to casefile without PDT element flag

- Bugs / Errors

0664 Firebox Tube Layout shows only 7 zones, whereas 9 zones are present in the length direction

0705 Improper display of Firebox Flame burner window

1103 Degree symbol is incorrectly represented in Chinese windows

1237 Labels for activating kinetics in different models not uniform

1313 Error when fixing a Splitter outlet flowrate to zero

1361 Asking for help on HTC in TLE shell model directs User to Property table section

1469 Acetylene conversion with too little H2

1522 Using SPYROTE to create SOR dtm's from EOR file the MTMT is still from EOR

1532 Convergence issues of recycle/multiple furnace case with simple reactors

1580 Error in generating DTM's

1597 Installer: back-button not working after license type choice

1601 Installer: Start Menu items created even when option to do so unchecked during install

1645 Button to display Fuel Conversion Profile just reads "Display"

1646 Unclear behaviour left/right buttons for manipulation of fuel conversion at beginning and end of flame

1668 SPYRO-Excel log file write error

1672 SPYRO Excel Interface PDT error

1678 Isobaric versus equal pressures tag

1709 Unable to calculate Propane mass flowrate while DS ratio, conversion and fuelgas flowrate are known

1729 Parameter limitation description for FLUXP in Spyro Manual incorrect/incomplete

1731 Copy a value from a table to an input field results in 0

1749 Incorrect reporting of number of tubes per coil in TLE DTM Data

1755 Cracking Coil Summary: Total Transferred heat shows only Transferred heat per coil!

1756 COT automatically filled out in coil outlet for new case

1763 Case with ampersand in filename crashes upon opening

1774 Installer v1.4: License update fail

1776 Installer v1.4: SPYRO7 Installation Repair option

1779 Internal errors with multiple convection sections

1786 Back shock cnv bank incorrect if splitter or mixer is present after bank

1796 EDM file is not generated

1800 Message ”For this kinetic scheme no feed characterization available” when attempting to use naphtha with KSH2

1801 UOM of air humidity not evident

1802 Air composition not updated promptly when adjusting humidity

1804 GUI issues in Simulation Monitor

1805 Component fraction basis (’Component analysis unit’) for FEED model not updated promptly

1808 Error reading case with special characters in case description

1815 Unwanted option to change boiling curve fraction for feed characterization

1816 Licensable features not properly parsed in documentation

1818 Error with radiant wall burner diameter in cm

1819 Error in visualisation of heat-release-points and profiles (burner points)

1821 Lingual improvement for the word ’burner’

1822 Issues with default units of measurement for coil models

1823 UOM loss when saving and opening case

1824 Display error for co-current and custom flow direction of bank

1825 Error message ”Cannot focus a disabled or invisible window”

1826 Internal error: HTC of convec bank outside domain

1828 Installer Script v1.6: VC2010 redistr are installed when present

1829 SPYRO ’About’ screen lists TES as registered trademark of Technip

1830 SPYRO 64-bits version ’About’ screen version info lists lsapiw32.dll instead of lsapiw64.dll

1831 Property Table Generation fails with incomplete boiling curve

1832 Property Table Generation labels

1834 SPYRO-Excel Interface Template folder

1835 Installer Script v1.6: SPYRO-Excel Interface is installed, while not selected

1838 Convection section outside HTC factor not shown correctly in CDM

1841 Copying numerical data lacks the header column

1842 Scroll bar missing for Model Browser

1844 Error writing new spyro file with propagated coke layer thickness

1846 No message when importing feed composition with error

1847 Incomplete update of Feed Characteristics

1849 EFPS Import: wrong fin type

1850 EFPS Import: TCPIPE not imported

1851 Unable to specify composition in feed model

1853 Importing feed specification files pfs fails

1854 Export detailed feed specification file fails for mole specification

1859 Case with invalid models on flowsheet

1860 Redundant preference to backup HSF

1861 Multiple furnace case cannot be solved

1862 Fail to solve with friction calculations in transferline volume

1863 Installer Script v1.6: SPYRO-Excel Interface (un)installs DTM templates

1864 Installer Script v1.6: Unable to update with newer version due to incorrect detection of version

1866 ESCOA method for flue gas pressure drop is not possible for a bank which consists of both bare rows and finned rows.

1868 Cup area unity error message during calculation phase

1873 Spyro cases resulting in negative outside htc's

1874 Intermediate graphs in simulation monitor show labels and variables of previous case upon case load

1877 Overdefined case or not

1878 Solver encountered Nan

1884 Case with steamdrum pressure fixed that is overdefined, which is not

1886 Several occurrences of "PS-Internal error" when running simulation

1887 Failure to create new case

1891 Simple mixer case, produces T outside domain error

1894 INSTALLER v1.6: no back or next option when wrong license option selected

1901 DTM creation takes a long time, even when not needed

1905 Unclear definition of pressure drop at coil inlet and coil outlet in Reformer simulation

1924 Several Chinese translations need to be corrected

1925 Datamatrix FDM generated, though no Firebox model is present

1929 Changing units of boiling curve in property generation fails

1951 SPYRO Excel Interface, reported coil pressure drop

1958 Inconsistency of 'Unit system' bar with the contents of the table it corresponds to

1960 Missing confidentiality page in SPYRO Suite 7 User manual

1962 The menu option "Imperial" of UOM preference is not correctly translated into Russian

1965 SPYRO7-Excel Interface: the OS7.dll is not found

1974 ATE fixed, but reported ATE result is different

1981 Missing pressure drop flue gas with ESCOA method in bank output

1983 Property table VDI Density water/steam incorrect

1984 Unexpected vapor formation in liquid area

1990 GOChar gives wrong results when the refractive index is used

2001 Running the Test Case set impossible in current development version

2002 Ambient Air temperature and Ambient Air pressure not displayed correctly

2003 Refractory roof and floor temperatures in reformers incorrectly reported as floor and roof temperatures

2006 64 bit SPYRO test for 32 bit compat.dll checksum

2011 Incorrect unit of measurement for pressure in Imperial UOM system

2014 Rerunning case after removal of radiant box results in crash

2016 Error TCTubeFixHelpVar not found in HSF

2019 Physical property table structures not properly deallocated

2023 Tutorial case not converging when TLE is added

2024 Installation of SPYRO Excel Interface fails

2029 Disabling analytical Jacobian in Firebox leads to crash

2030 Inconsistency between equations used in Residual and Jacobian calculation in the convection row model

2031 Inconsistency between equations used in flue gas pressure drop calculation and the documentation (ESCOA method).

2033 SPYRO 64bit About Screen Version Info shows info on some 32bit dll's that are actually named differently on the 64bit platform

2034 Unassigned value for reduced volume

2048 Crash when closing the program after running the case.

2049 Changing UOM does not affect certain variables

2050 Reading UOM system from a case file with Firebox is not done correctly

2058 Opening a case file causes Spyro to hang

2059 Spyro hangs when copying a models to a new case with KS9002

2060 Generating DTM files from the VOS fails

2063 Importing co-crack feed does not work

2066 Spyro crashes when the simulation starts.

2069 Steam drum tab says StreamDrum

2073 SAPC_Tester reports an error in a conversion of UOM of some SLNK output parameters

2075 If venturi in coil inlet is enabled, case will not converge on Coil Inlet Pressure

2082 Hydrogen Process Data Sheet template Excess air is not the result value

2083 Running a valid 7530 case with a PDT fails

2084 Comments in Overlay-YieldPerformance.xlsx

2090 Invalid pointer operation when deleting models

2091 Component Specification (weight or mol/vol) in the YieldPerformance not given

2093 YieldPerformance template does not recognize the Severity Specification for COT

2094 YieldPerformance.xdmt: Downstream pressure does not appear to be taken into account

2095 Missing HSF-entries for PolyCokeRateAdj and PolyMaxThickness in Coil Pipe pass model

2100 YieldPerformance.xdmt: COT not read during simulation

2102 Component list and Component fraction are editable for other feed types than 'detailed component list'

2103 Testlicense.exe ends with a command prompt

2104 Closing Testlicense.exe window will result in error message

2106 Release Test Cases 'Berre VGO KS9002' and 'Berre VGO KS9306' not converging

2107 TestLicense.exe returns PROGRAM TERMINATED WITH ERROR -1003

2114 Access violation occurs when a specific area within the "Firebox - Output table" is clicked

2118 Incorrect molar mass calculated for lumped isomeric components

2126 When dumping a solver statistics file the SRTO programgenerated a -5 IO RTE

2127 SRTO DSPYIN(140) =1 does not work according described feature in the manual

2128 Different background color of the labels in the Bank layout diagram

2130 FurnacePerformanceOverview.xdmt: the Steamdrum Pressure reports the input, not the result value

2141 Button for Feed mode selection (Hydrocarbons, steam or nitrogen) in Reformer Tube model has disappeared

2144 Warning about exceeding maximum temperature in the convection tube metal thermal conductivity table references wrong label

2153 Converting a feed composition from KS9306 to KS7 yields a long unreadable message

2155 Thermal conductivity pipe of a row is not properly imported from ecf case files

2161 Pressure drop result in SpyroXML is input value and not the result

2163 Importing ecf file triggers crash

2164 [INSTALLER] Multiple inconsistencies between installers for online and offline SPYRO

2167 Some strings are not translated, but instead an empty string is shown

2169 SPSL reports ”run-time error” when trying to calculate the feed characterization

2170 Importing the attached ecf file triggers a crash

2171 PDT check fails for FLOATS ARRAY DATA of Firebox tube positions

2173 [INSTALLER] SPYRO Suite 7 User Manual not copied during installation

2175 PDT check fails for missing lane-to-lane distance

2176 Loading the attached case file triggers a crash

2178 [INSTALLER] Details of successful installation indicate a copy failure

2179 Importing a SPYRO 5/6 Keyword Input File (*.dat) fails in 64bit SPYRO

2180 [INSTALLER] No shortcut created to SPYRO Suite 7 User Manual

2181 [INSTALLER] No shortcut created to 64bit Uninstaller

2182 [INSTALLER] Uninstalling 64bit SPYRO fails to remove the original Installer from the Program directory

2183 [INSTALLER] License file in program directory not removed at uninstall

2185 Viscosity calculation in reformer tube model yields incorrect results

2186 Thermal Conductivity (TC) calculation in reformer tube model yields incorrect results

2187 Running the attached case file triggers a crash

2190 Approach to Equilibrium temperature difference does not match kinetics in reformer model

2191 The solution of the reforming of species heavier than CH4 is dependent on the number of finite elements

- Known issues

2008 Effluent results in fractions instead of wt% , unit not changeable

2027 No boundary checking for gasoil characterization boiling curve

2068 Calculated specific gravity 0.0 for a gasoil characterization

2092 Excel Interface: Apply to current sheet after running simulation will return last simulation values

2133 Unable to reset or delete non-mandatory PINA data

2137 Suspicious values generated physical properties for HGO feed

2139 Suspicious values steam properties in PhysProp298K

2165 Default value for the Venturi split factor is 0, while the minimum value is 1

Although the convergence behavior of Simple Reactor models has vastly improved, it is still advised - when building a case from scratch - to keep all conversions in Simple Reactors at 0.0 (default value) for an initial run, then change all conversions to required values and run again with a hot start.

5.8 Version 7.5.3.2

- Bugs / Errors / Crash

1966 Cold start convergence Reformer cases inadequate after implementation of modes for steam and nitrogen

1967 Feed containing only nitrogen triggers 'division by zero' message upon case load

- Known issues

It is currently not possible to create a radiant coil simulation with rigorous firebox completely from scratch. After dragging a furnace model to the flowsheet and opening it, adding a radiant coil model and firebox will result in a crash or severe error. Workaround: create case with furnace (including radiant coil and firebox, including all necessary connections) in a recent version, such as 7.5.3.0 or 7.5.2. Save the (incomplete) case, open in 7.5.3.2 and continue. Please note that this error does not apply to reformer simulation.

When a reformer is simulated with a cold start and a fixed ATE, SPYRO performs a presolve. Afterwards, the resulting ATE is not yet the specified ATE. Running the simulation just once more will correct this.

If a feed model, that has a User defined Property table, is copied, then the copy has lost the property table definition.

The Simple Reactor module sometimes causes convergency problems when using a hot start.

The convergence of reformer simulations has been improved: it is however still advised to use the base cases prepared by the TBP Hydrogen department that have converged and can be used as starting point for new simulations.

Specific modes for nitrogen circulation and steam circulation have been developed: at the moment, due to the fact that most conditions are very different from normal operation, these will require the use of either of two base cases that have been prepared for these two modes.

5.9 Version 7.5.3.1

- Bugs / Errors / Crash

  1803 Steam reforming simulation not converging when using nitrogen purge

  1843 Error propagating coke layer thickness

  1881 CDM: Pitch arrangement always incorrect

  1882 CDM: Radiating fluegas temperature is incorrect

  1893 CDM: CDM is not generated for KSH2

  1932 Number of rows in Reformer not taken into account when handling initial guesses for fuel/air mass flow rates in the Firebox

  1935 Cold start convergence in reformer cases very inadequate

  1938 CDM: Tube layout not shown correctly

- Features / Enhancements

  1671 SPYRO Excel Interface compatibility with Excel 2013

  1928 Add user input for gauge pressure offset

  1933 Facilitate key Reformer results extraction

- Cosmetics / Documentation

  1895 Limit display of parameters tab in the firebox to experts when the hydrogen kinetic scheme is used

  1897 Units of measurement of absolute air humidity are not clear

1898 Confusing indication for tube inlet location for reformer simulation

1899 Option to select 'roof' as flue gas exit is confusing for reformer design

1956 Firebox efficiency labels unclear

- Known issues

  If a feed model, that has a User defined Property table, is copied, then the copy has lost the property table definition.

  The Simple Reactor module sometimes causes convergency problems when using a hot start.

  The convergence of reformer simulations has been improved: it is however still advised to use the base cases prepared by the TBP Hydrogen department that have converged and can be used as starting point for new simulations.

  Specific modes for nitrogen circulation and steam circulation have been developed: at the moment, due to the fact that most conditions are very different from normal operation, these will require the use of either of two base cases that have been prepared for these two modes.

5.10 Version 7.5.3.0

- Bugs / Errors / Crash

  1867 Compatibility of the SPYRO7 based KTIFileGenerator.

  1875 Case crashes upon loading due to error in retrieving intermediate graph labels.

- Known issues

  If a feed model, that has a User defined Property table, is copied, then the copy has lost the property table definition.

  The Simple Reactor module sometimes causes convergency problems when using a hot start.

  Reformer simulations are still difficult to get to converge: the TBP Hydrogen departement has prepared several base case that have converged and can be used as starting point for new simulations.

  Start-up conditions in reformer simulation (i.e. nitrogen circulation and steam circulation) can not yet be simulated

5.11 Version 7.5.2

- Bugs / Errors / Crash

  1843 Error propagating coke layer thickness.

- Known issues

  If a feed model, that has a User defined Property table, is copied, then the copy has lost the property table definition.

  The Simple Reactor module sometimes causes convergency problems when using a hot start.

5.12 Version 7.5.1

- Bugs / Errors / Crash

  1309 vpitch dependency bank with single row.

- Known issues

  If a feed model, that has a User defined Property table, is copied, then the copy has lost the property table definition.

  The Simple Reactor module sometimes causes convergency problems when using a hot start.

5.13 Version 7.5.0

- Bugs / Errors / Crash

  0275 It is possible to select models in the intermediate graph that are not present in the case.

  0693 Insufficient memory: crash.

  0746 Change of the number of SPYRO sections in a coils yields bad convergence after hot start with full firebox.

  0883 when simulating a case all fixes are shown as estimates.

  0999 Convec HTC factor in CDM files should be the result value, not the input value.

  1206 No message is issued if the DTM is not written.

  1210 Access violation when disconnecting stream.

  1216 Default value is set to 0 in xml-file. Causes problems in TemplateExporter.

  1496 Order of TLE in the EDM is incorrect.

  1516 Bank order in CDM file not correct.

  1638 Firebox in Furnace section can be copied, allowing a second firebox in the furnace.

  1666 SPYRO-Excel Interface is not subject to its license features.

  1667 Simple Reactor parameters not updated promptly.

1668 SPYRO-Excel log file write error.

1670 Unknown exception: getting value from Double Array.

1674 HasUserValue Flag in case absent for radiant coil pitch with obvious UserValue.

1675 Access violation when adding a component after removing all components in a detailed feed characterization.

1682 Missing version number on OS7.dll.

1683 Case starts to solve with COLD start and misses a fix with HOT start.

1685 Unit of measurement of gas temperature profile in firebox not consistent.

1686 Invoking 'About' screen results in Access Violation.

1687 Generating DTMs doesn't seem to work.

1688 Exception when trying to simulate the following case.

1694 Access violation in module 'SPYRO7.exe".

1695 Internal error while trying to run a new case created with KS7.

1698 Illegal sequence errror in LU-decomposition - Fatal Error.

1699 Error for FIREBOX Coil Layout when using ft in stead of m.

1700 Error for Mandatory Y pos of Firebox not specified/given.

1701 Case with Firebox does not solve when default length unit is ft.

1705 A pushpin appears in upper left corner in splitter model after unchecking 'use component splitting' checkbox.

1706 Cannot run attached case.

1707 Property Table looses type definition when case is loaded.

1710 Invalid floating point operation.

1714 Grace licensing.

1715 Coil node adiabatic volume crash.

1717 Intermediate graphs not visible when default selected.

1719 Air specification in mass should not be allowed.

1722 Selecting multiple components with Ctrl possible.

1724 Access violation when all entries in a property table are removed.

1725 Acid Dewpoint not reported when SO2 present in flue gas.

1740 Inconsistency in units for the firebox model resulting in being unable to specify the coil and burner layout.

1747 ESCOA selection (default) for updated cases (7.3.6 to 7.4.1).

1748 Reported Outside HTC is invalid for shockbank.

1757 Uneven number of coils error message.

1758 Cold case runs into error ”TermConduc=Nan”.

1759 Cold case difficult to converge.

1762 Option to write additional Firebox data to .CSV-file can not handle more than one Firebox model.

1771 Access violation when copying a radiant coil.

1772 Paste TLE submodels.

1778 CoilNode: when UseKinetics is selected, the volume is not shown.

1782 Access violation when adding a Radiant coil model after a firebox.

1790 ”No authority to get element” when starting a simulation.

1791 The Firebox sidewall clearance is not updated when one of the dependent variables is changed.

1792 If the convec tube row arrangement is changed from square to triangular, then the corbel option appears in readonly mode.

1793 If the convec tube corbel option is enabled (“bare, triangular”), then the size parameter appears in readonly mode.

1794 The sidewall clearance of a convec bank is not updated when one of the depending parameters is changed.

1795 Size of effluent array is not equal to the number of components times....

1798 Pressure drop in DTM’s specified in absolute pressure and not in pressure drop.

1799 Custom setting for pressure drop UOM not stored.

1806 Air specification ’Component analysis unit’ can be changed to mass, which should not be allowed.

- Features / Enhancements

0040 Add a graph of the property table.

0070 DM - General entity element.

0091 DM - Count variables and residuals.

0356 Physical property table: Is it possible to store the table title (as imported).

0539 Graphs shown on the screen during simulation.

0763 Banks with finned tubes in squared layout.

0928 Ability to turn off kinetics completely.

1198 Vapor fraction not corresponding with temperature profile.

1239 Partial cold start with presolve options.

1298 Monitor graph setting.

1410 UOM Change.

1427 Grace period of Sentinel license system not working.

1452 Remove simulation succeeded popup.

1648 Add 'required duty' to the results of the Simple Heater.

1697 Convergence error radiant coil case on COT.

1769 Outlet tube diameter for tube in adiabatic volume should be always fixed to inlet diameter.

1777 Ability to make any model a spyrolink model via interface.

- Cosmetics / Documentation

0934 Table formatting request.

0966 Update all sceen shots in User manual for new version.

0991 Option to disable pop-up from icon the taskbar.

1311 Converting from 7.0 to 7.2 in one case a bank called "PEB" is renamed to "PEB - 1compat".

1389 Simple Reactor Module Locations.

1512 SPYROrt.exe reports as SPYROdme.exe in help.

1629 Error message too long for error message dialog box (or too little room for message).

1656 Venturi model inlet diameter.

1684 Label for Flame burner stage in firebox not displayed correctly.

1690 Intermediate graphs visible at advanced models.

1708 Accuracy of displayed component fraction sum too low.

1721 Component fraction column label should not read "Sum of components".

1751 Decrease number of digits in simulation monitor.

- Known issues

If a feed model, that has a User defined Property table, is copied, then the copy has lost the property table definition.

The Simple Reactor module sometimes causes convergency problems when using a hot start.

The order of the components for the hydrocarbon feed in the Excel Interface has changed, the user has to manually change the component order in the current Excel Interface when opening old cases.

5.14 Version 7.4.0

- Bugs / Errors / Crash

  0416 Monitor graph display - TLE temperature <-200 °C.

  0641 Tube skin temperature.

  0671 Changing property system causes Jacobian to be structural singular.

  0953 Correct/check firebox efficiency calculation according API560.

  0973 Monitor graph profiles - parallel volumes are concatenated.

  0999 Convec HTC factor in CDM files should be the result value, not the input value.

  1020 Intermediate solve results look incomplete: part for transferline is missing.

  1023 Intermediate solve results look incomplete: graph does not contain the transferline results.

  1024 Intermediate solve results look incomplete: results for the TLE are completely different.

  1084 Value of C8PION incorrect for latest SPYRO7.

  1093 Conversion of Key Components fail with Multiple furnace (including recycle) simulation.

  1098 Copying of banks leads to wrong row names.

  1173 Copying of banks leads to wrong row names.

  1195 Default UOM ignored for PDT.

  1246 CDM: Bank number of SHE is incorrect.

  1256 TLE tubesheet fouling checkbox missing.

  1257 Unable to distinguish between process and flue gas flow in specifying process inlet flow to convec bank.

  1309 vpitch dependency bank with single row.

  1322 Feed model Air specification.

  1330 When using barg as default unit, also the pressure drop shows in barg.

  1339 Problem not able to be solved.

  1345 Enormous steam dilution flow reported in DTM.

  1346 EDM shows TLE data in the wrong order.

  1355 EDM: TLE info - Tubes per coil not properly shown.

  1356 EDM: Transferline volume incorrect.

  1363 Case does not create data matrix files.

  1366 No authority to get element.

1369 Not able to save case under certain filenames that contain a 'full stop'.

1381 Mismatch in ethylene flowrate in economic module.

1382 UOM_Initialise does not transform C-string into Fortran string.

1391 Coil surfaces in EDM should be reported as Cold.

1395 Case does not create data matrix files.

1398 LAPACK routine DGETRF error.

1414 OMP crash.

1450 Case does not generate data matrix (DTM) files.

1454 INSTALLER SS7 v13, Error AutoIT.

1456 INSTALLER SS7 v13, missing shortcuts.

1462 The flame burner profile gives strange distribution graph.

1467 SPYRO unable to create datamatrix files. Spyroconsole error.

1471 Simple reactor: component selection screen for User Defined reaction scheme, 'add component' button missing.

1481 Warning on vapor fraction in BFW feed model.

1484 Mixer warning message regarding tables.

1487 Effluent Summary shows ethylene as 0.2238

1488 DTM: Change 'HC flow at coil outlet' into 'HC flow in effluent'.

1489 Get error message about empty component list while not empty.

1492 INSTALLER v13: Error when Exceladdin is disabled.

1494 SPYRO ENTRANCE MODEL (VENTURI) PHYSICAL PROPETY.

1503 Copying a composition results in an error message.

1505 GO Characterisation unresponsive.

1507 ThermConduc = Nan;Solver encounterd NaN.

1509 Effluent Summary fraction vs percent.

1515 Conversion of percentage - fraction makes SPYRO lose the value.

1516 Bank order in CDM file not correct.

1518 Bank order in CDM changes with Save as..

1519 Different convergence behavior for CFV.

1525 Fix of splitter ratio not correctly saved/retrieved.

1526 SPYRO-Excel Interface: Object reference not set .....

1529 Monitor graph settings not working.

1530 Double click on general case data cases a sub flowsheet to be opened.

1534 SPYRO freezes when reducing number of rows in a bank.

1535 SPYRO-Excel Interface: error in getting value.

1538 Access violation in MKL_thread.

1542 Solver encountered NaN.

1543 Internal Error: cold plane area.

1545 Custom layout editable while read only.

1546 Trend over time.

1552 Internal error: initial guess out of bounds.

1554 Able to click default in simulation over period of time while simulating.

1555 Error opening SPY7 file.

1566 Crash upon clearing/emptying Model Name Field in Model Browser.

1584 Adding PDT Model to Flow sheet fails with multiple PDT Tabs.

1587 Error messages when calling pyDM_CmdGeneratePropTable.

1590 Issues with PropTable Generate interface.

1592 Unable to add intermediate data storage points.

1593 Update model browser side bar.

1600 Installer: unable to compile the installer.

1603 Installer: Spyro Excel Interface is installed even when option to do so unchecked during install.

1604 Installer: case files not copied / unclear where to place them.

1607 Flowsheet stays disabled after simulation.

1609 Access violation while calling pyVOS_SetMessageString.

1614 Installer: Installer fails to compile with new Sentinel License server.

1615 Unable to open Spy7-file in the Excel Interface.

1616 Attempting to save case results in crash.

1625 Normalization detailed component list FEED model missing.

1626 Unit of Detailed composition component fraction unclear.

1627 Temperatures for TBP input are not verified to be above absolute zero.

1630 Error selecting sink model / empty summary and effluent tabs.

1652 SPYRO-Excel crash due to component list.

- Features / Enhancements

0371 Please add molecular weight to Mixer results.

0854 Flowsheet not printed correctly.

1021 Simple Heat Exchanger results do not show Flow rates.

1063 Add additional output to adiabatic volume.

1077 Allow creation of DTMs for KS other than 9306.

1089 Add Fired Heat to the summary of the Simple Firebox.

1170 Splitter define flowrate of outlet.

1183 Box zones, finite elements & TMT.

1199 component selection window popsup.

1266 Simple heater outlet vapor fraction.

1373 Reported coking rate value.

1380 Create reactive volume in SPYRO Node.

1384 Output simple reactor module.

1405 Feed characterisation update.

1417 Connecting firebox models.

1427 Grace period of Sentinel license system not working.

1429 Add fix for coil inlet temperature and pressure in the entrance model.

1430 Add fix for the radiant wall temperature in the simple firebox model.

1437 Update the KS7 kinetic scheme to th elatest version.

1455 INSTALLER SS7 v13: standalone license.

1457 INSTALLER SS7 v13: standalone license installation.

1476 INSTALLER, SentinelLM add slmdemo.exe.

1521 Feed Characterization update.

1528 TThread.Suspend and TThread.Resume are deprecated.

1586 Synchronize BanklayoutForm and RowDataForm (in convection section).

1589 Only display graphs that have data on simulationform.

1591 Implement unit-selection in the outputgraph of the firebox.

- Cosmetics / Documentation

0548 Remove Effluent slate in sink model.

0872 Sink results - Molecular mass without units.

0936 Add functionality to read/write coke profile for the radiant coil and TLE.

0945 The FIREBOX HTC its application area should be made public.

0948 Component order Effluent Summary incorrect.

0959 Firebox results - Change conduction into convection.

0982 Sidewall burner layout figure too small.

0994 ASTM D2887 specification in liquid volume. This should be weight.

1014 Coking rate units not completely visible on output graph.

1017 Property table - double units.

1056 Extensive documentation for component library.

1111 Intermediate graphs for X-over volume.

1397 nC4 Paraffin content for naphtha feed stock identification.

1418 Unclear message :"The circumferential length of one of the rows of bank [name of bank] is negative".

1421 Height is defined twice in firebox Flame Burner.

1490 Unclear message: "Internal error: Computation of T not converged".

1493 Installation Guide Requirements/Compatibility of the Excel Interface.

1551 Error message shows #C1 when connecting 2 same streams as fuel.

1598 Default intermediate graph size.

1617 amount of significant numbers at Y-axis of intermediate graphs.

1633 Background of screens are white and grey mixed.

1634 Labels 'Mass fraction' and 'Molar fraction' in the 'Effluent (wet)' tab of the Simple Reactor have been switched.

- Known issues

  If a feed model, that has a User defined Property table, is copied, then the copy has lost the property table definition.

  The Simple Reactor module sometimes causes convergency problems when using a hot start.

  The order of the components for the hydrocarbon feed in the Excel Interface has changed, the user has to manually change the component order in the current Excel Interface when opening old cases.

5.15 Version 7.3.6

- Bugs / Errors

  1514 Access violation after simulation

- Known issues

  Values with the following units: ton/h, kton/h, lb/s and lb/h are changed into an incorrect value. Users should correct these values manually.

5.16 Version 7.3.5

- Bugs / Errors

  1422 Case with boiler coil has high residual when rerunning

  1428 Tubesheet temperature of Spyro Suite 7 are overpredicted

  1453 Different row specification does not work for ID and OD

  1458 Shock duty calculation incorrect

  1463 Error reported for engineering notation with a comma

  1468 Access Violation OS7.dll

  1470 Simple reactor conversion level error

- Features / Enhancements / Cosmetics

  1474 Absorption emittance ratio should be increased from 0.75 to 0.8

5.17 Version 7.3.4

- Bugs / Errors

  1419 Starting with convection section leads to crash

  1428 Tube sheet temperatures of SPYRO® Suite 7 are higher than of EFPS

  1426 Reported total energy out does not match the total energy in in the FIREBOX model

  1342 A zero heat flux in the coil pipe pass model causes a singularity

  1424 SPYRO 7 freezes when adding convection section

- Features / Enhancements / Cosmetics

  1437 Update the KS7 kinetic scheme to the latest version.

  1431 Add a tuning parameter in the FIREBOX model to adjust the furnace efficiency.

  1434 Add correction on the Nusselt number to account for the effects of the higher wall temperature

5.18 Version 7.3.3

- Bugs / Errors

  1394 Opening old Spyro revision does not work after a save

  1393 Crash on running kinetics in the convection section

5.19 Version 7.3.1 & 7.3.2

A bug has been fixed in the XML libraries that resulted in an access violation for licenses with predefined templates (PDT).

5.20 Version 7.3.0

- Features / Enhancements / Cosmetics

344 Do not use hot start (HSF) for specific models

590 Not initialised monitor graph 1 window

593 Version Info for Installer

656 Convec bank auto interconnect

765 INSTALLER: detect installed SPYRO 7, update option

799 TLE Tube side - Output - Name inconsistency

994 ASTM D2887 specification in liquid volume %. This should be weight %

1042 Coil pipe pass - Bend definition

1095 Set all PDT data to readonly

1096 Hide models defined by PDT

1114 Installer specify custom folder

1115 INSTALLER option to trace back the used installer script version

1116 INSTALLER option to exclude the Microsoft Excel Add-in

1117 INSTALLER replace the Client.7z

1127 Ability to export a feedcomposition in a separate DFS-file

1143 Implement new version of Sentinel security driver.

1151 INSTALLER Excel guide link

1161 Add simple reaction model

1190 Added the default value used by SPYRO for the outside HTC

1200 Extend size of Case Description

1219 LPG and Pygas License only detailed composition and air specification

1242 PDT Model Browser data as readonly

1274 Fixing the outlet ratio in component splitting

1305 Solve message box has a red cross without apparent reason

1307 Add update of Process inlet/outlet defintion in CNV bank model

1317 Add version number of SPYRO template exporter in help-about menu of SPYRO7.exe

1347 The fraction of evaporation cannot be set in the TLE shell

1351 Add option to fix the vapour fraction in the output of the mixer.

1359 Naming of convection section rows

1376 TLE: Default for shell side fouling HTC

- Bugs / Errors

401 Supra model in sidebar not deselected after double click

848 Individual / per row specification for sidewall burners

893 Air preheater, connected to Firebox, gives wrong temperatures in FDM

961 Fedd model - Add components - Add sort on different columns

1016 Model Report - Temperature unit not shown

1018 Acid dewpoint shows °Cwhen not calculated

1030 Simulation period of time - Day settings are lost

1035 Custom row layout for convec bank

1054 Internal error with large pitch value in coil section

1076 FDM doesn't show air temperature

1081 Variable boundaries for Prandtl are too small

1090 Failed Copy and Paste of Icons on the main flow sheet

1118 INSTALLER Spyro core without core

1119 INSTALLER SPYRO Template exporter

1120 INSTALLER the client specific files are missing

1121 INSTALLER The deinstaller fails

1194 Cannot set integer values in the excel template exporter

1208 Internal error on initial guess Spyro Entrance

1214 Parent Control Error

1224 Not able to see TLE shell input screen

1226 Unit conversion not working for input in the TemplateExporter

1229 Error upon adding rows in a case with results

1230 Inconsistencies with row naming when adding rows or copying banks

1231 Insufficient duplicate name verification

1232 SHE gives non-possible outlet temperature

1244 normalization only possible for detailed component list

1252 Importing a feed composition cleans all other imput in the feed model

1253 Pressing F1 links to the wrong help topic

1254 ASTM D-2887 Boiling curve specification

1260 length of firebox seems to be correct also according message of SPYRO Suite 7

1268 Convective HTC from fluegas to the radiant tubes seems to be incorrect in the FIREBOX model

1283 Access violation multiple furnace with recycle sim

1286 Uninstaller folder removal

1288 Access violation when removing all time steps

1289 Wrong cokelayer unit when importing

1294 Convec PS-Internal Error

1302 Downstream pressure fix check for venturi seems incorrect

1303 Cold start returns an overdefined case, while hot start case runs fine

1310 EDM doesn't show amount of extra TLE data

1319 Not all the desired output time points are displayed after a converged simulation

1323 Slight changed solved case not able to be solved

1328 Shortcuts have wrong start in path after installation

1329 Not possible to change stoecheometric coefficients for the Simple Reactor

1338 Memory usage of SPYRO

1377 The reported row correction of the HTC in the convection bank should change for ESCOA and CONVEC method

- Documentation

481 Manual : Firebox parameters

487 Firebox - Parameters - ¡Absorbtion-Emittance ratio¿ missing from the help

800 TLE tube output - What does the thermal conductivity refer to?

814 Unclear description of Heat flux ratio

815 Update description of Flue gas opening

831 Add descriptive drawings to the SPYRO manual

843 ABRES - Extend description

844 Coil Node - Update description

873 Add more details on the use of different absolute tube roughness in the manual

936 Add functionality to read/write coke profile for the radiant coil and TLE

945 The FIREBOX HTC its application area should be made public

966 Update all screen shots in User manual for new version

1025 Component list update

1032 Datamatrix description of heat fluxes is incomplete

1041 Update Documentation Nusselt Number

1048 Adiabatic volume - Property system

1056 Extensive documentation for component library

1061 No Inside HTC multiplier description

1072 Also feed license type per component

1113 Venturi angle definition

1136 Description how to model SRT furnaces in SPYRO

1182 Simple heater description missing in the help

1188 INSTALLER documentation -4010 security error

1202 Format of PPF not defined

1249 Documentation of EDM sgould be updated to reflect changes in TLE data

1261 Simulation monitor explanation missing

5.21 Version 7.2.2

- Features / Enhancements / Cosmetics

  1184 Use TLE instead of Transferline Exchanger

  1276 Feed Model: Search in component adding does not work on C number

- Bugs / Errors

  1227 RecordIndex out of range in the TLE Shell side

  1228 Coil TLE case not converging

  1233 After removing a few rows in a convection bank, error message about disabled models

  1235 Message: actual size of aray (52,19,6028) differs from expected size

  1238 In CNV bank the user defined property system can be set to nothing

  1240 Excel Addin for MOC/ROC

  1241 Simple Heater not showing

  1243 Attached case cannot be integrated by SPYRO

  1251 Error changing language

  1255 Adiabatic volume outlet diameter for tubular geometry

1258 Missing UOM for Number of Fins in CDM template

1263 Contents of DTM file no longer contains C10+ etc

1270 Venturi inlet or outlet diameter

1271 Error message on trying to use ”create new spyro file using initial coke layer”

1272 TLE model: tubes per coil incorrect

1273 Yield output with time simulations in the SPYRO SUite 7 GUI hops places when going to other time points

1275 CDM no longer created

1278 No ’Shock duty for finned tubes’ option

1281 Internal error encountered in cross-overvolume

1282 Venturi inlet or outlet diameter

- Documentation

1187 INSTALLER documentation EXCEL confirmation

A Development configuration

SPYRO® Suite 7 (incuding documentation) version 7.7.5 was developed and released with the help of:

Intel® Parallel Studio XE 2018 Update 3 Composer Edition for Fortran and C++ Windows
Microsoft® Visual Studio 2017 version 15.9.14
Microsoft® Visual Studio 2017 Installer Projects 0.9.3
Microsoft® .NET Framework 4.7.1
Delphi® XE2
Embarcadero® RAD Studio 9.0
CMake 3.10.0
Maplesoft™ Maple 17
Python 3.7.2
Git 2.19.1.windows.1
GitLab Community Edition 11.7.0
Nullsoft Scriptable Install System 3.03
MiKTeX 2.9.7100
TeXnicCenter 2.02 Stable
VeraCrypt 1.22
Microsoft® Windows 7
Microsoft® Windows Server 2012 R2